Absorptive Lenses

IT HAS BEEN ESTIMATED that 200 million Americans use sunglasses either for cosmetic appearance or in an attempt to increase their vision. Certainly, people who have had surgical operation for cataracts and therefore no longer have the natural barrier to radiation, particularly to ultraviolet, can greatly benefit from absorptive lenses. But does an average person really see better with sunglasses? This is a complicated question and depends on many factors, the most important of which is the general level of illumination. In dim light, such as evening or indoors, visual acuity improves with increasing illumination. Sunglasses, by reducing general illumination, also reduce visual acuity. The argument that they reduce glare of headlights when driving has been disproven by studies showing that the decreased vision predominates over the glare reduction.

In moderate illumination, sunglasses generally neither increase nor decrease vision. When illumination is high, however, results of studies are not clear-cut, but generally suggest that sunglasses improve performance of some visual tasks. One definite beneficial effect of absorptive lenses is on dark adaptation. This process is dependent on the intensity and duration of the preadaptation stimulus; thus sunglasses worn at the beach during the sunny day will allow better visual sensitivity when driving home (without wearing them) in the evening.

Sunglasses also influence color vision; this is a negligible factor with neutral gray lenses and increases with other colored lenses, particularly yellow. The effect is most pronounced for patients who are already color defective in whom it can severely impair their already compromised hue discrimination. This may present a danger to color-deficient persons because of poor recognition of traffic signals. Another potential hazard of sunglasses is in the use of polarizing lenses. The plastic sheet polarizers intended for polarizing visible light are inefficient in the near infrared spectrum and it has been observed that, although glare will be removed from reflected images of the sun by such polarizers, infrared rays will not be absorbed and therefore could be hazardous.

Finally, a new type of phototropic glass has recently attracted considerable attention. This contains silver compounds which darken upon exposure to ultraviolet light and lighten when this radiation decreases. The glass transmits ultraviolet light during the darkening phase and does not filter out the infrared spectrum at any time. The total darkening is generally insufficient for bright lights, so that an additional absorption coating must be added to the back surface of the lens to increase its overall darkening effect. These lenses tend to be expensive and react slowly, especially while lightening after the ultraviolet stimulus is removed.

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REFERENCES

Miller D: The effect of sunglasses on the visual mechanism. Surv of Ophthalmol 19:38-44, Jul-Aug 1974

Clark BAJ: Polarizing sunglasses and possible eye hazards of transmitted radiation. Am J Optom 46:499-509, Jul 1969

Matthews JL, Fansworth D, Kinsey EV, et al: Report on tinted optical media. J Opt Soc Am 42:689-690, Sep 1952

Richards OW: Sunglasses for eye protection. Am J Optom 48: 200-203, Mar 1971

Technetium-99 Lacrimal Microscintigraphy

—A New Technique to Evaluate the Lacrimal Drainage System

IN 1972 ROSSOMONDO and co-workers described a new method of evaluating *in vivo* the lacrimal drainage system utilizing a minute quantity of technetium-99 radioactive tracer delivered as an eye drop. The progression of the radioactive tear is followed through the drainage system using a gamma camera with a micropinhole collimator. The procedure takes between 15 and 25 minutes (Figure 1). Throughout the procedure the patient

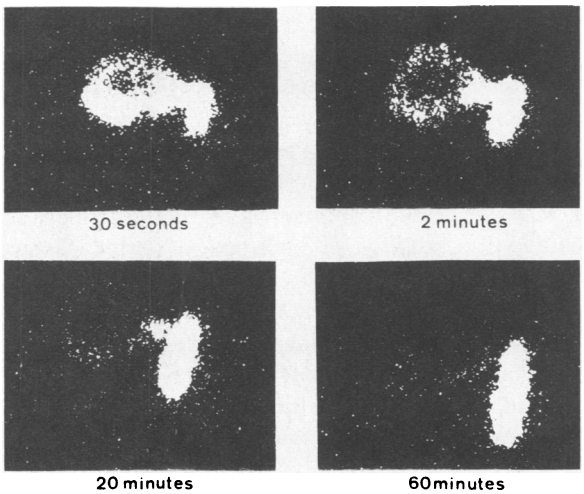

Figure 1.—Technetium-99 microscintigraphy in a normal subject. (Compliments of Dr. D. M. Maurice)